

Water Conditions Summary

April 14, 2010

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Operations Control & Hydro Data Management Department
South Florida Water Management District

SFWMD 2010 Dry Season Rainfall

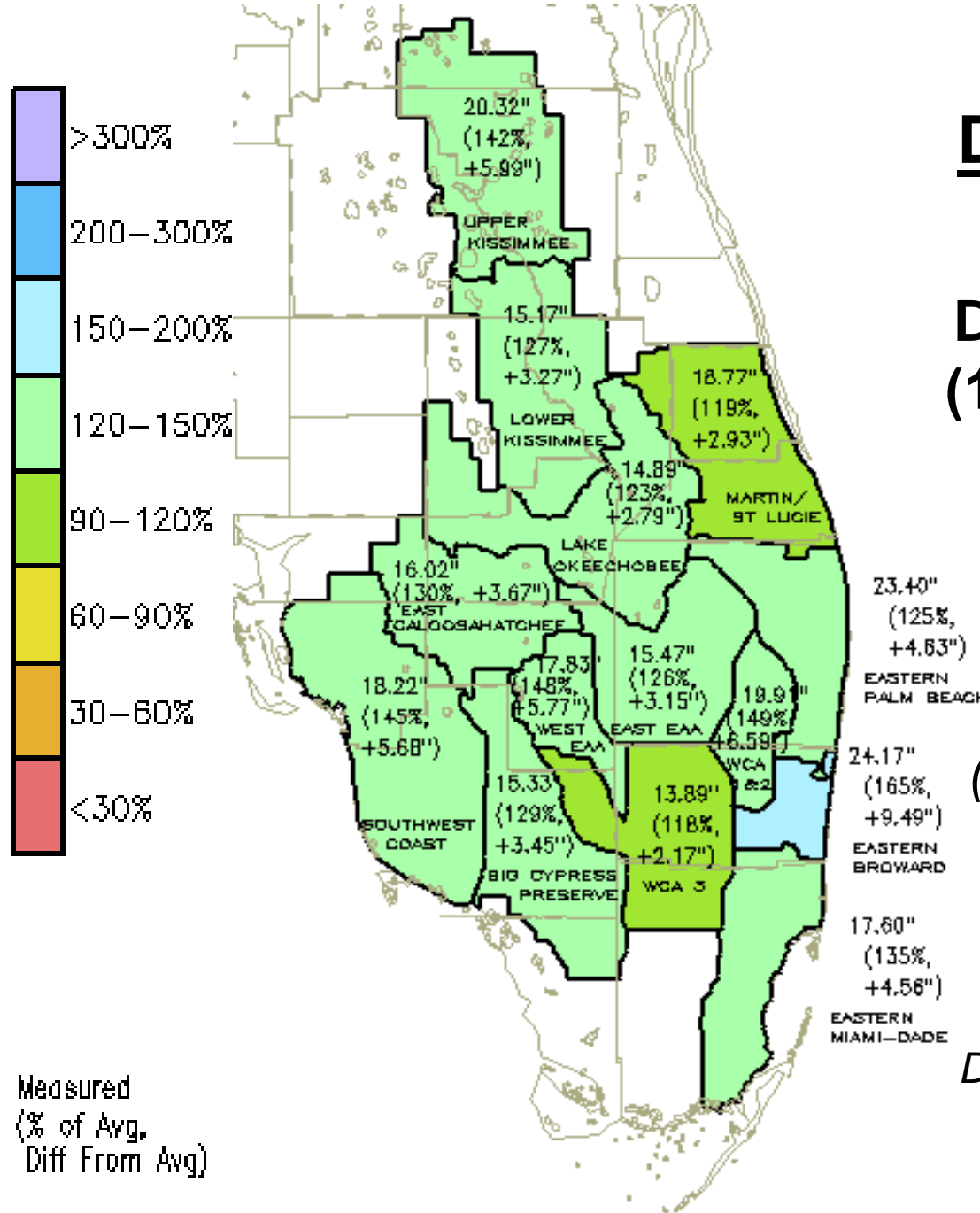
Nov 2 – Apr 13

DISTRICT-WIDE: 17.33"
(132% of Avg, or +4.23")

*1950-2008
Dry Season (Nov-May)
Median 15.3"*

(20.6" during El Nino years)

*Recall Last Year
Nov-Apr Rainfall was 4.5"*
Driest since records began in 1932



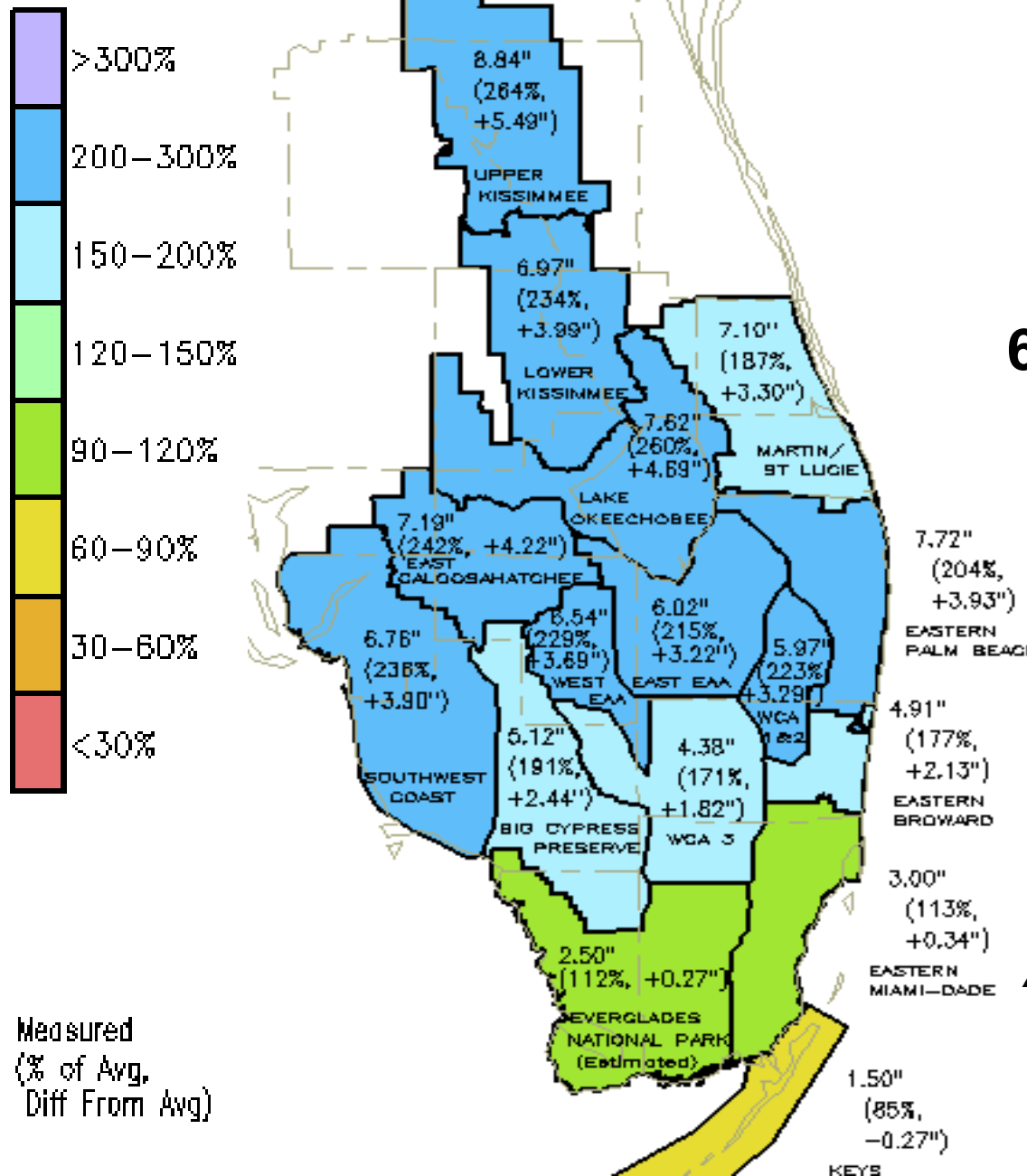
SFWMD 2010 March Rainfall March

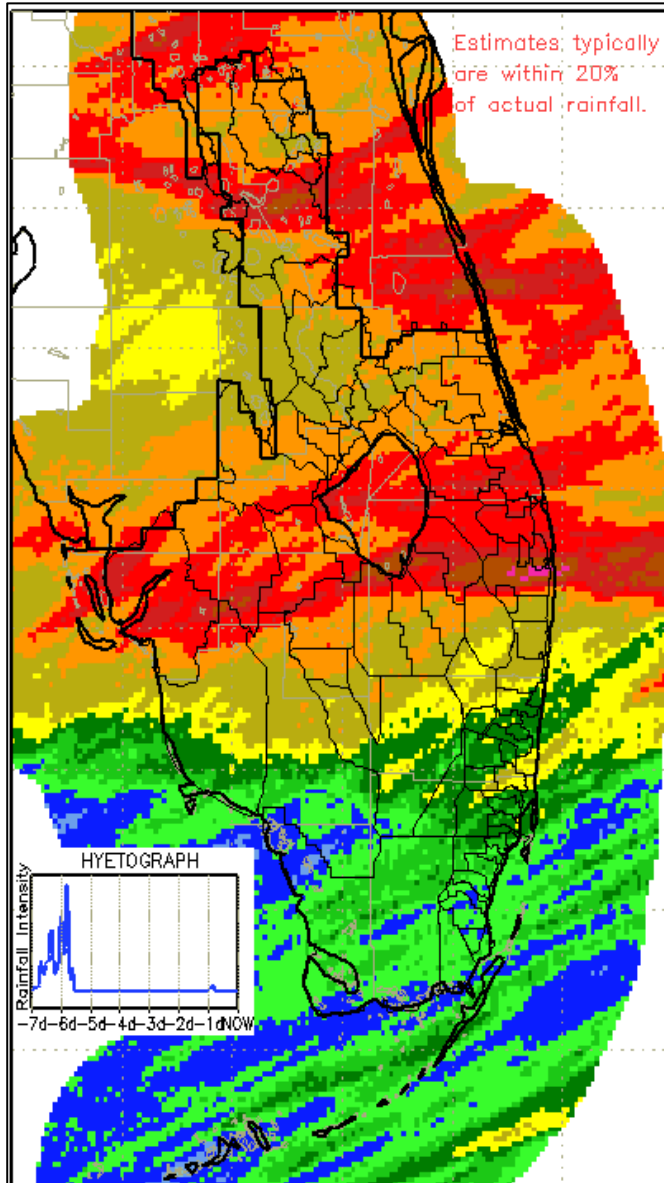
DISTRICT-WIDE:
6.53" (217%, +3.52")
Average March Rain = 3.0"

**2 months worth of rain in
2.5 week period**

11-12 March: 3.08"
22 March: 0.50"
28 March: 1.59"

About 8 inches over Lake Oke

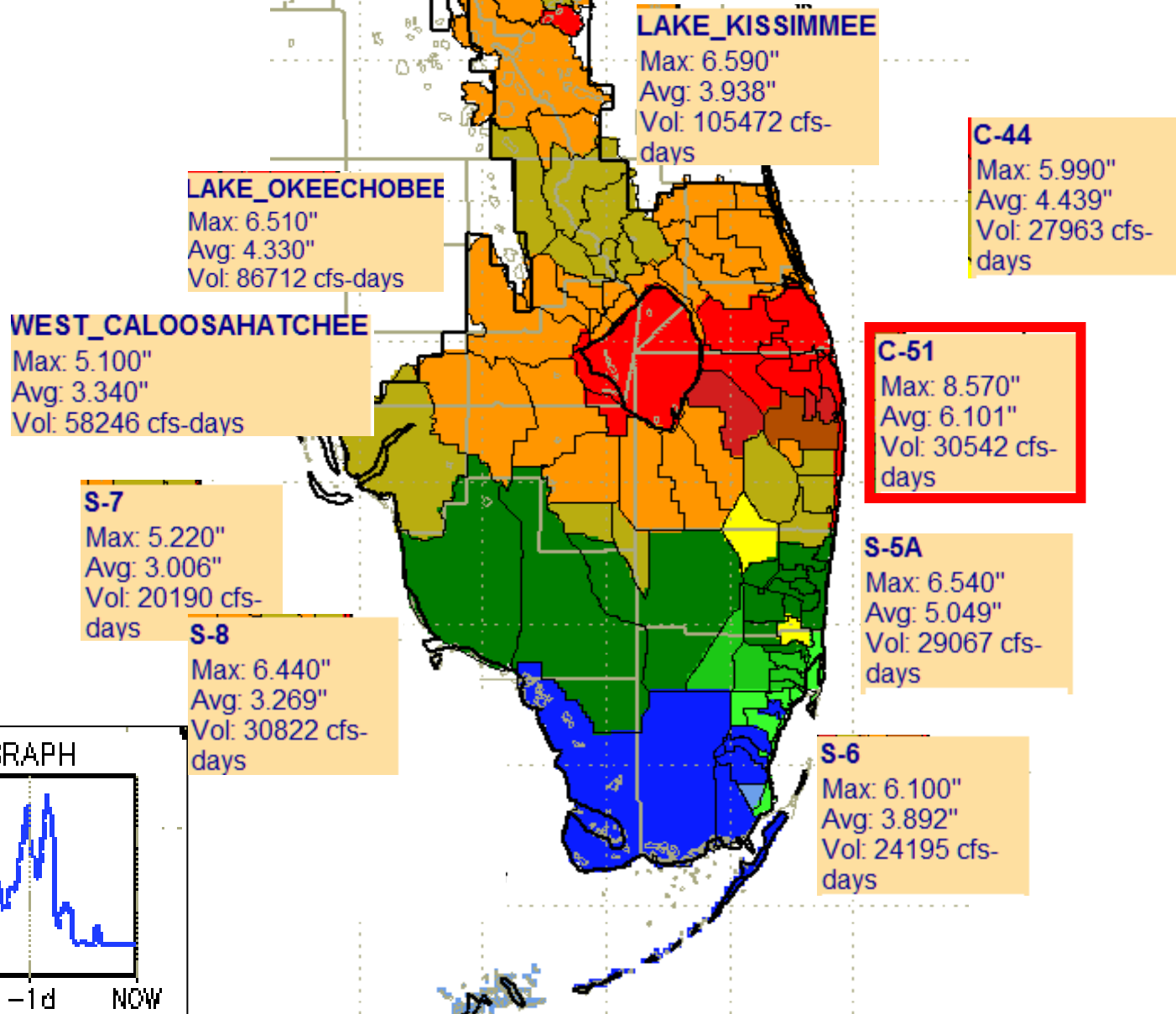




March 11 – 12, 2010

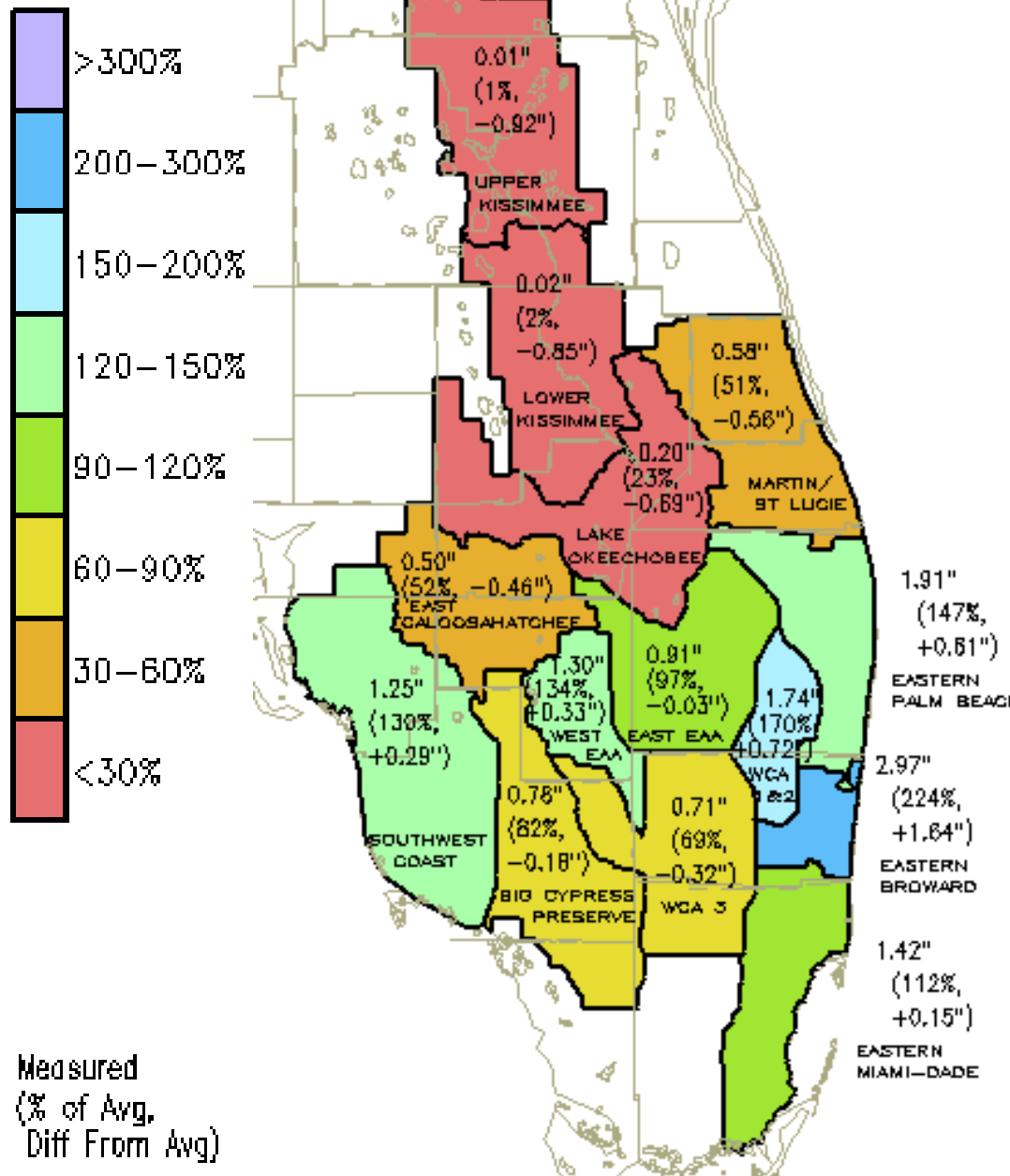
- The District averaged 3.08 inches of rain over March 11th and 12th.
- This was the wettest 48-hour rainfall total since Tropical Storm Fay in August 2008.
- Basin rains ranged from 1 inch to 5 inches with local rains to 9 inches.
- Only the extreme rain event of January 16, 1991 was a more wet 2 day dry season event going back through 1988.

March 11 – 12, 2010



SFWMD 2010 April Rainfall April 2 - 13

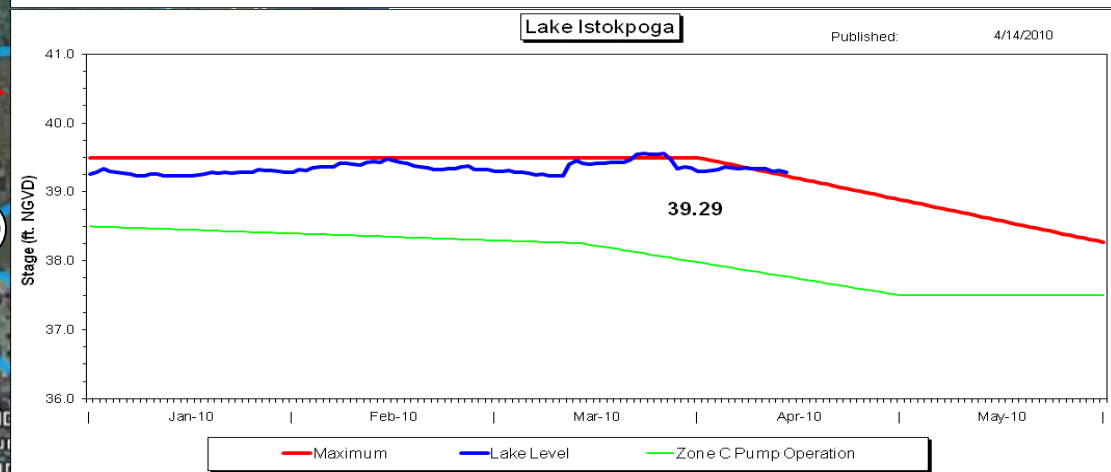
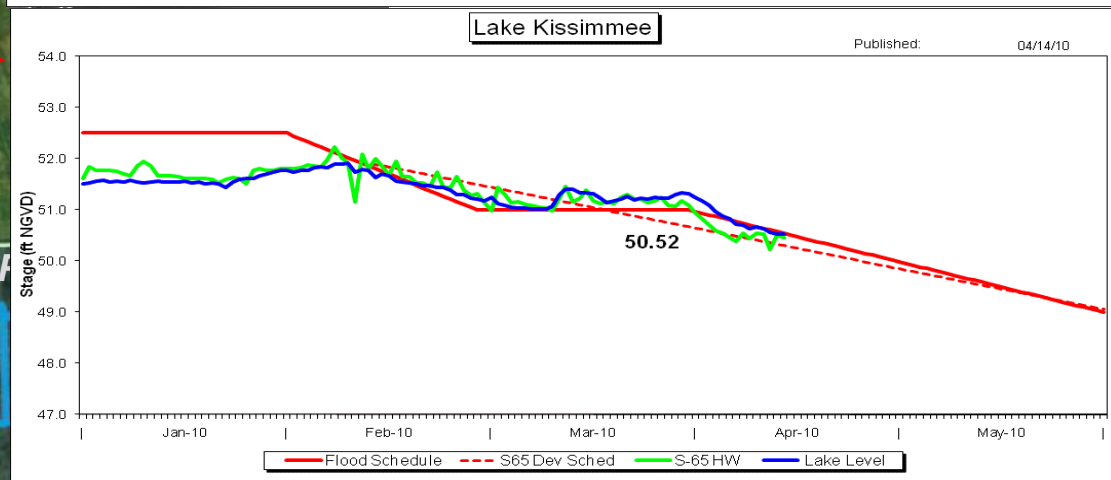
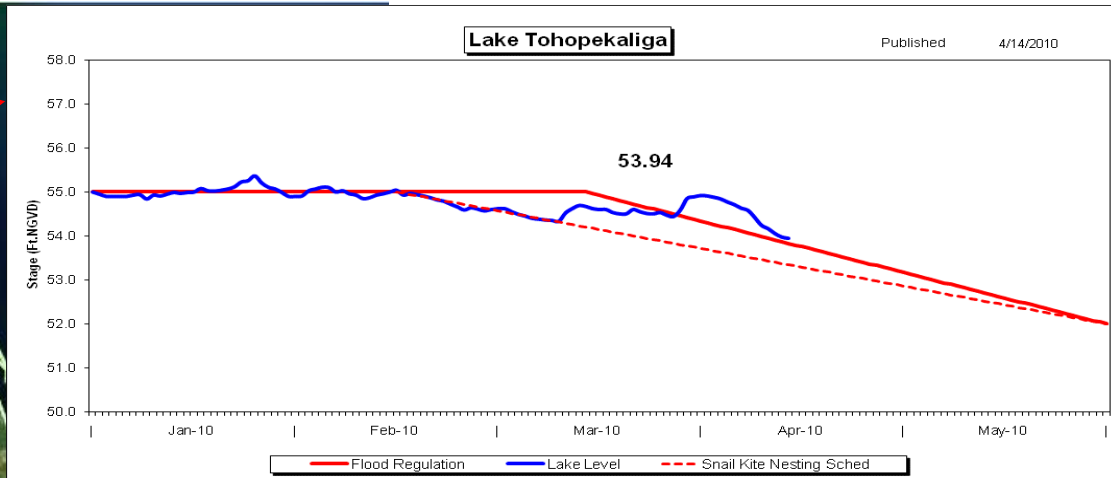
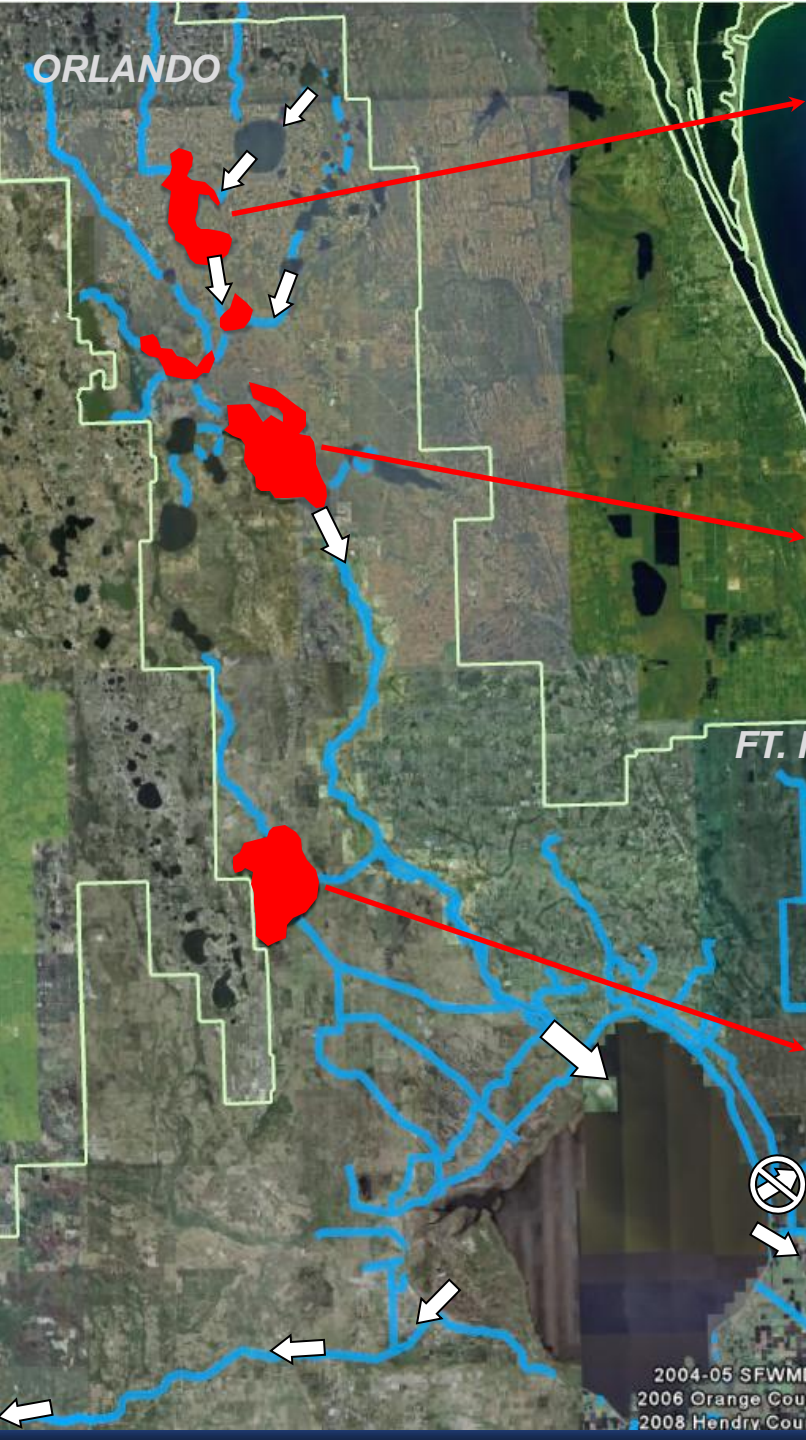
**DISTRICT-WIDE:
0.80" (80%, - 0.20")**

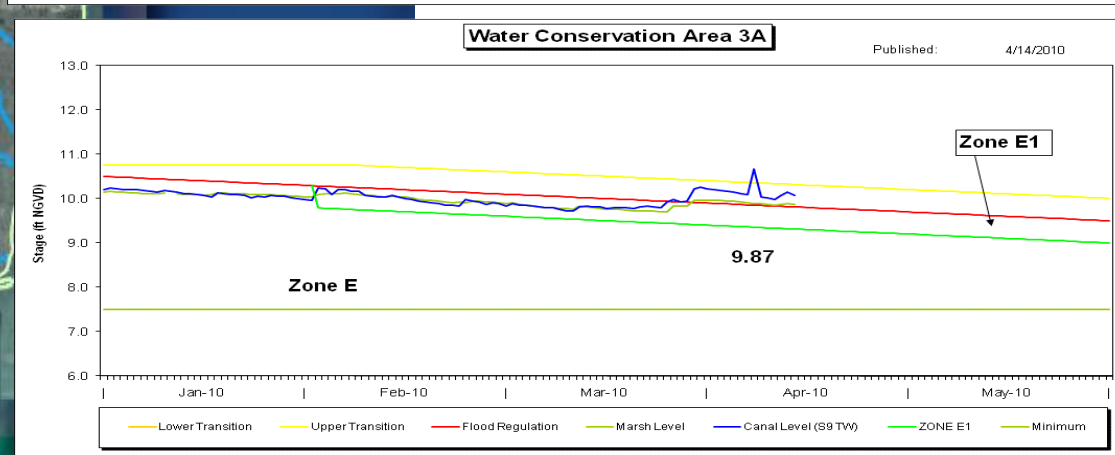
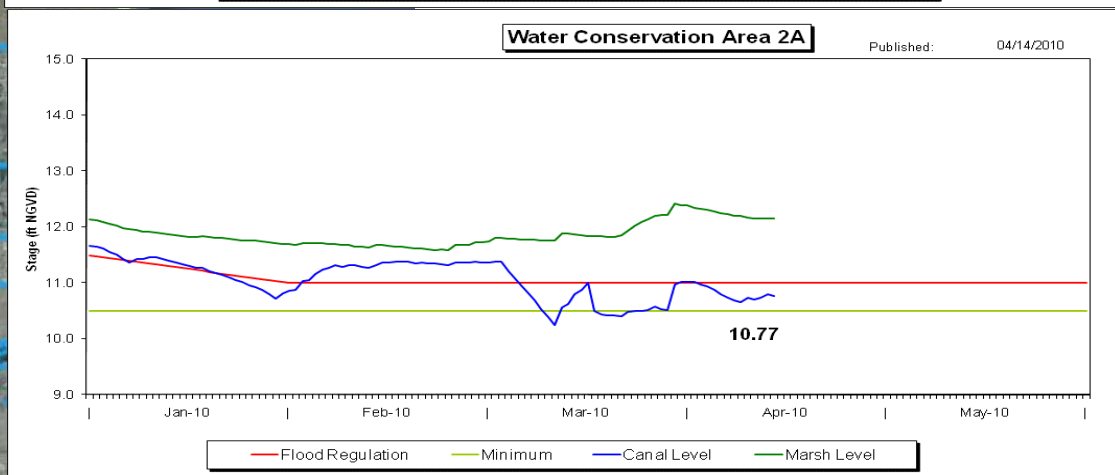
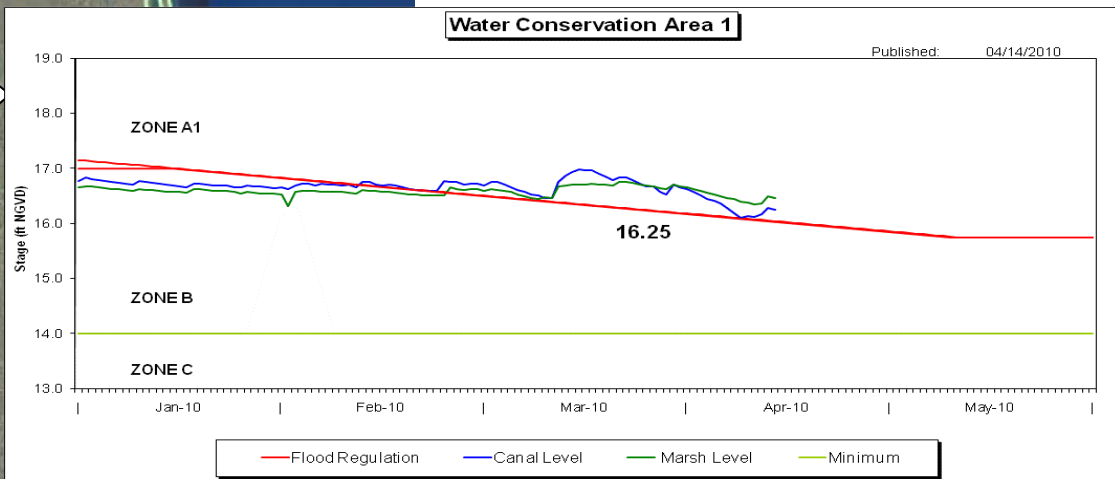
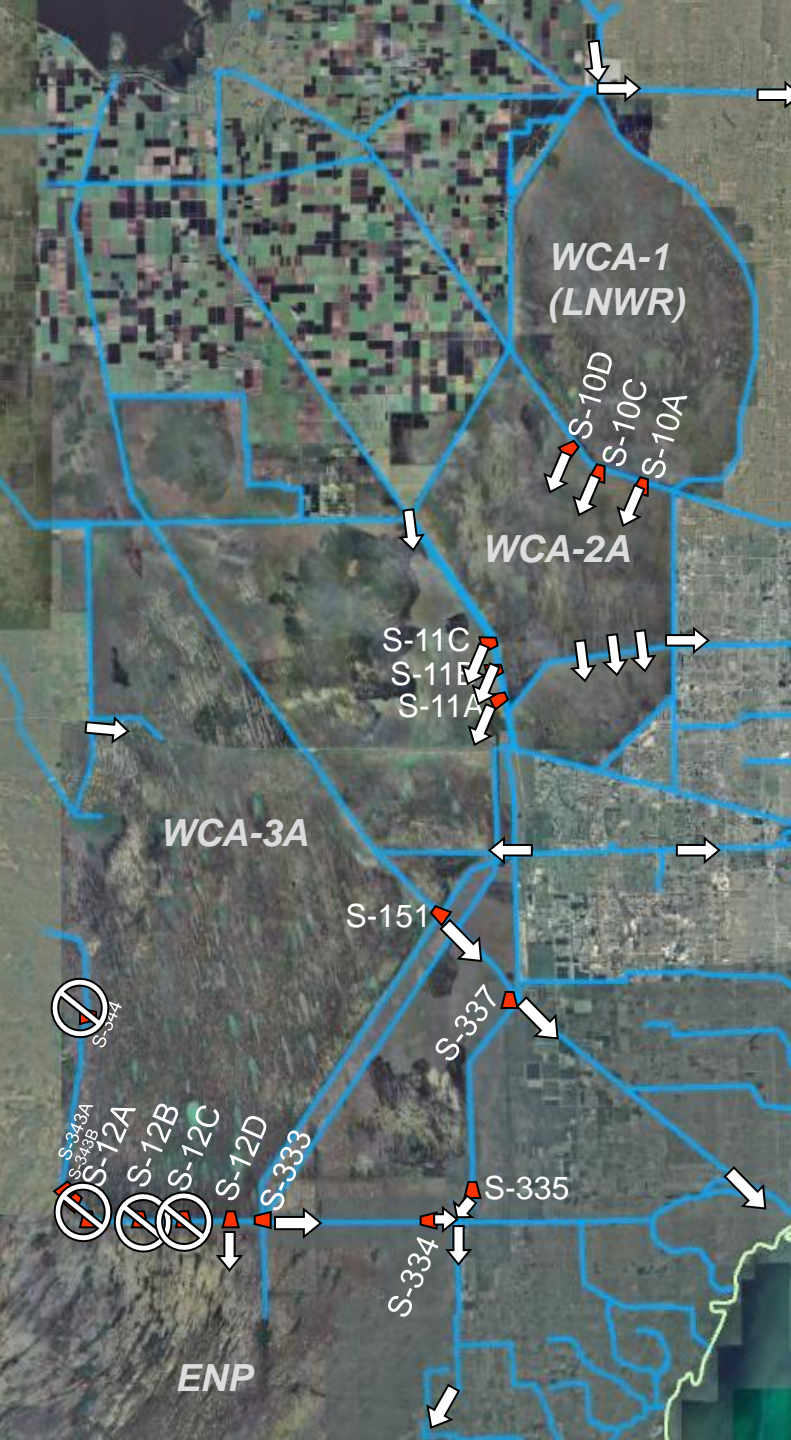


- All interior basins received less than average rainfall so far
- All coastal basin received above average rainfall so far as a result of the rain this past weekend

Even with the above normal rainfall... O&M and Construction are busy maintaining and repairing the system.

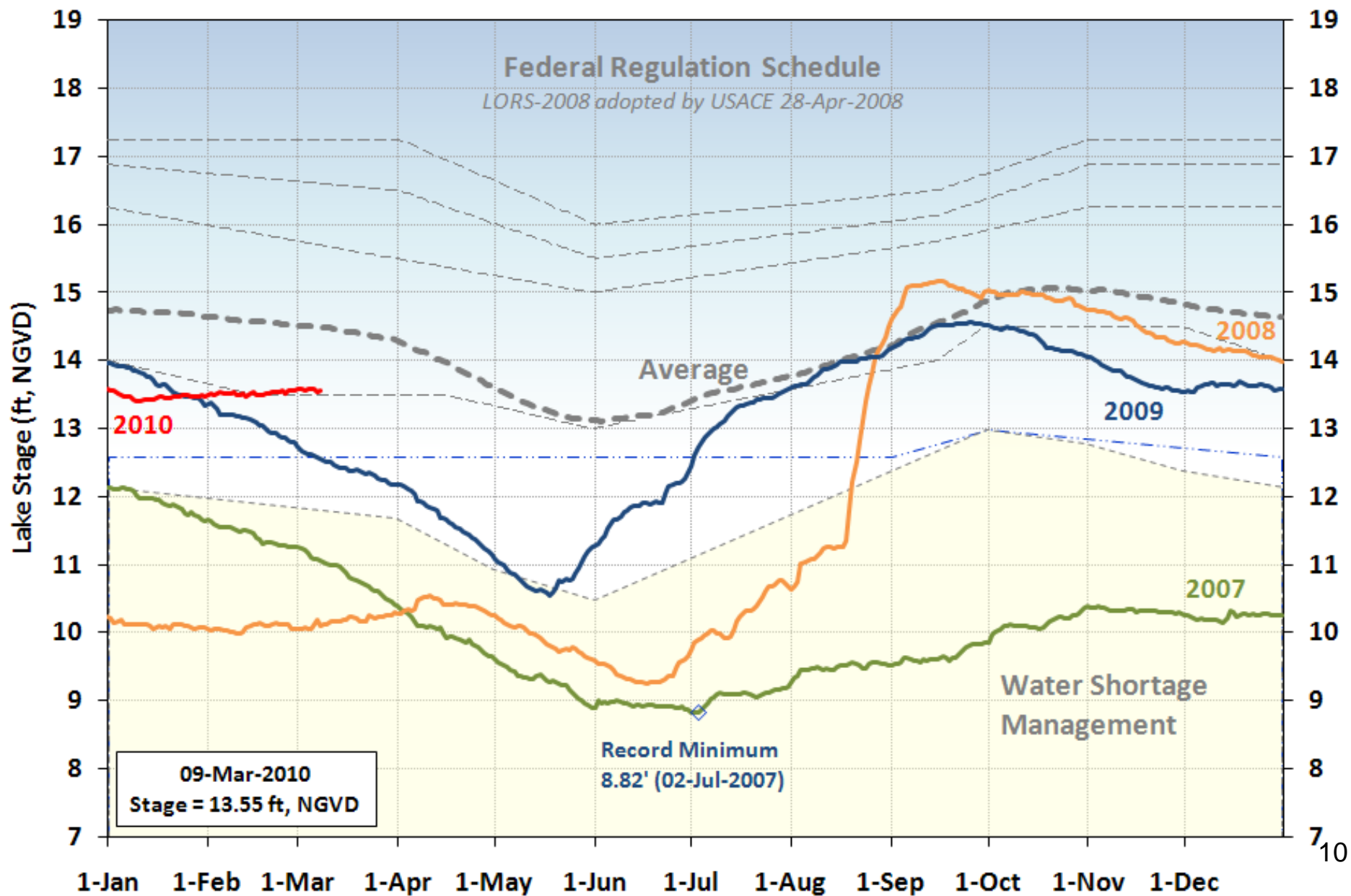






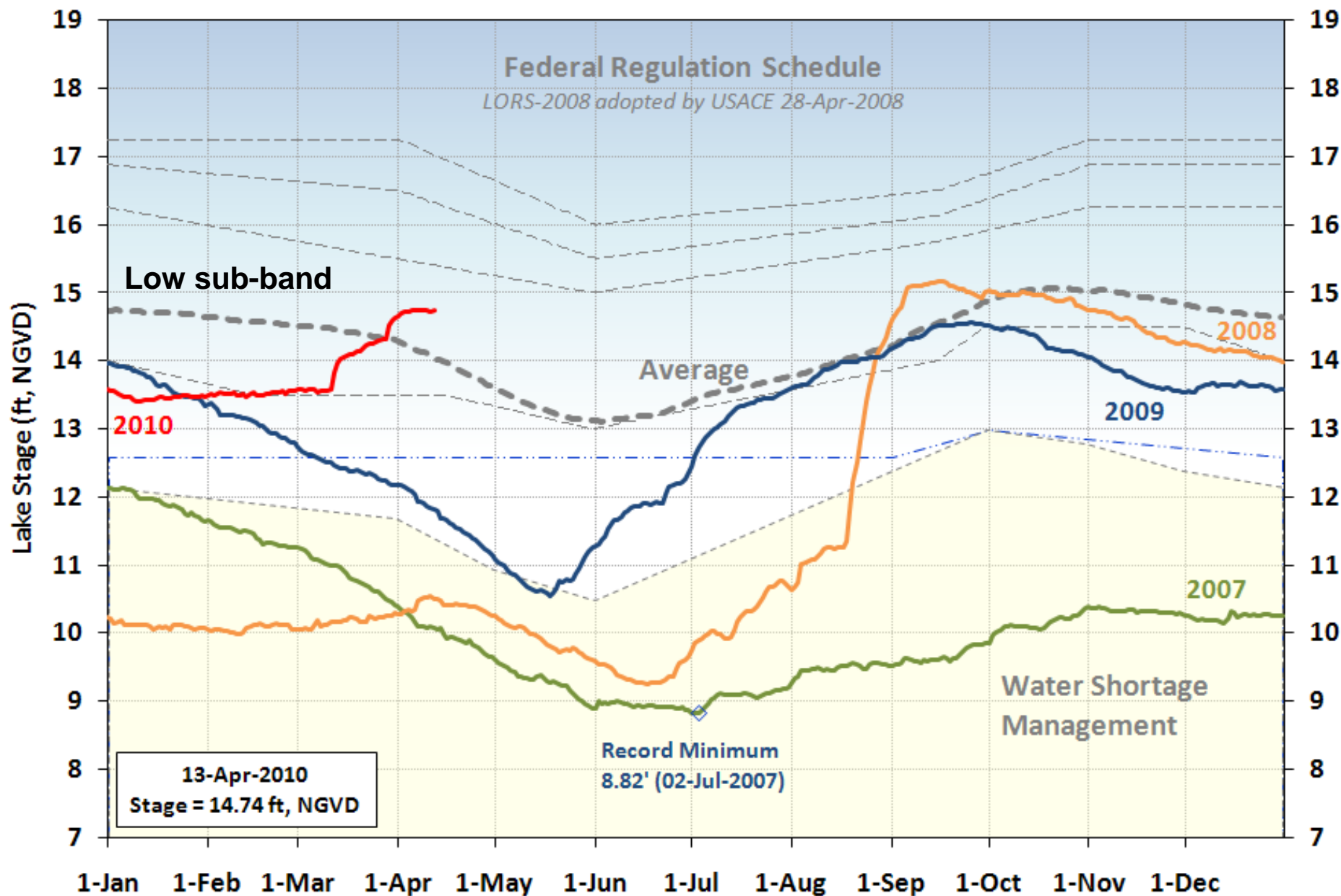
Lake Okeechobee Stage Hydrograph Comparison

--- Average (1965-2007) — 2007 — 2008 — 2009 — 2010



Lake Okeechobee Stage Hydrograph Comparison

--- Average (1965-2007) — 2007 — 2008 — 2009 — 2010



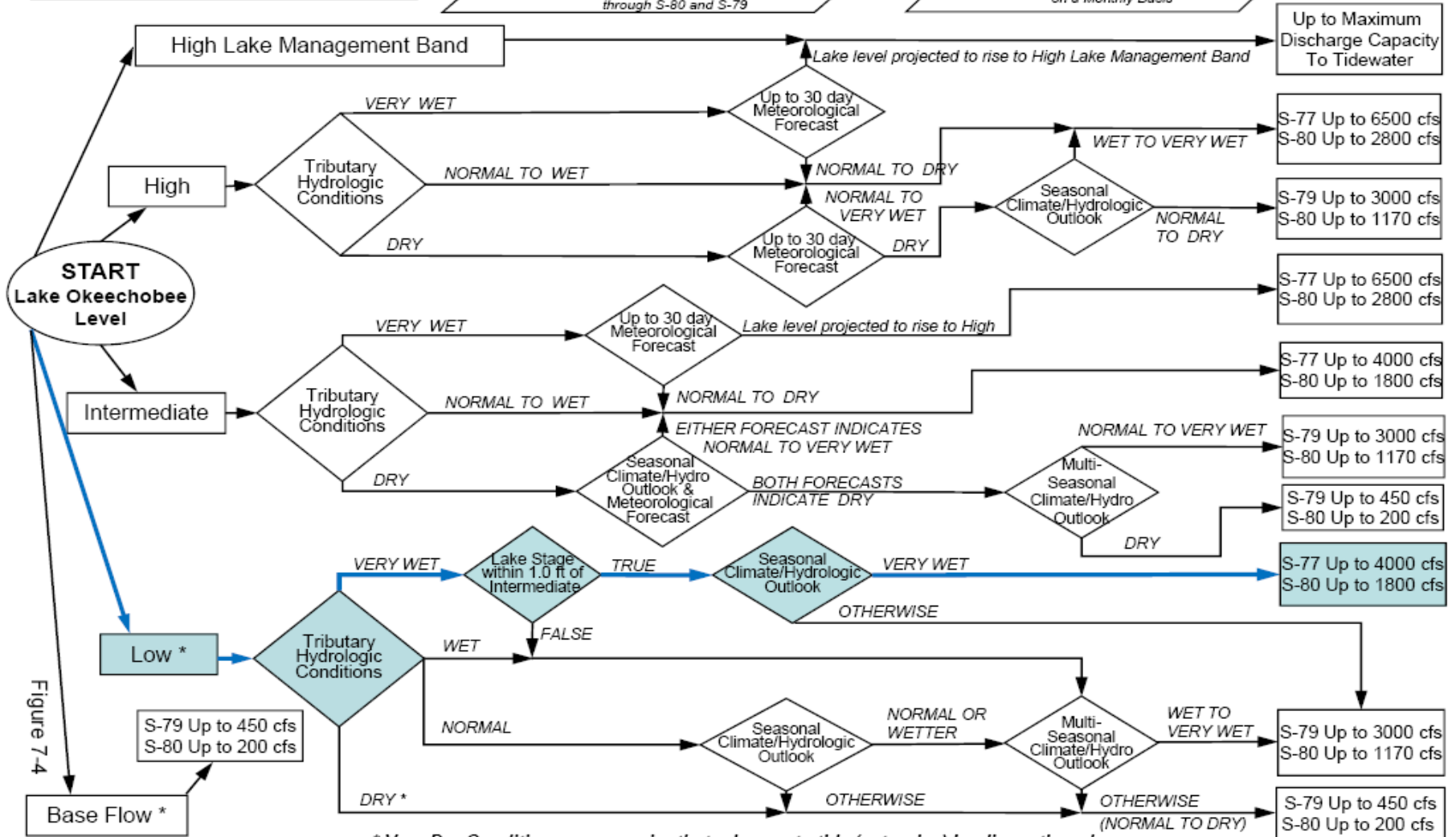
2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis

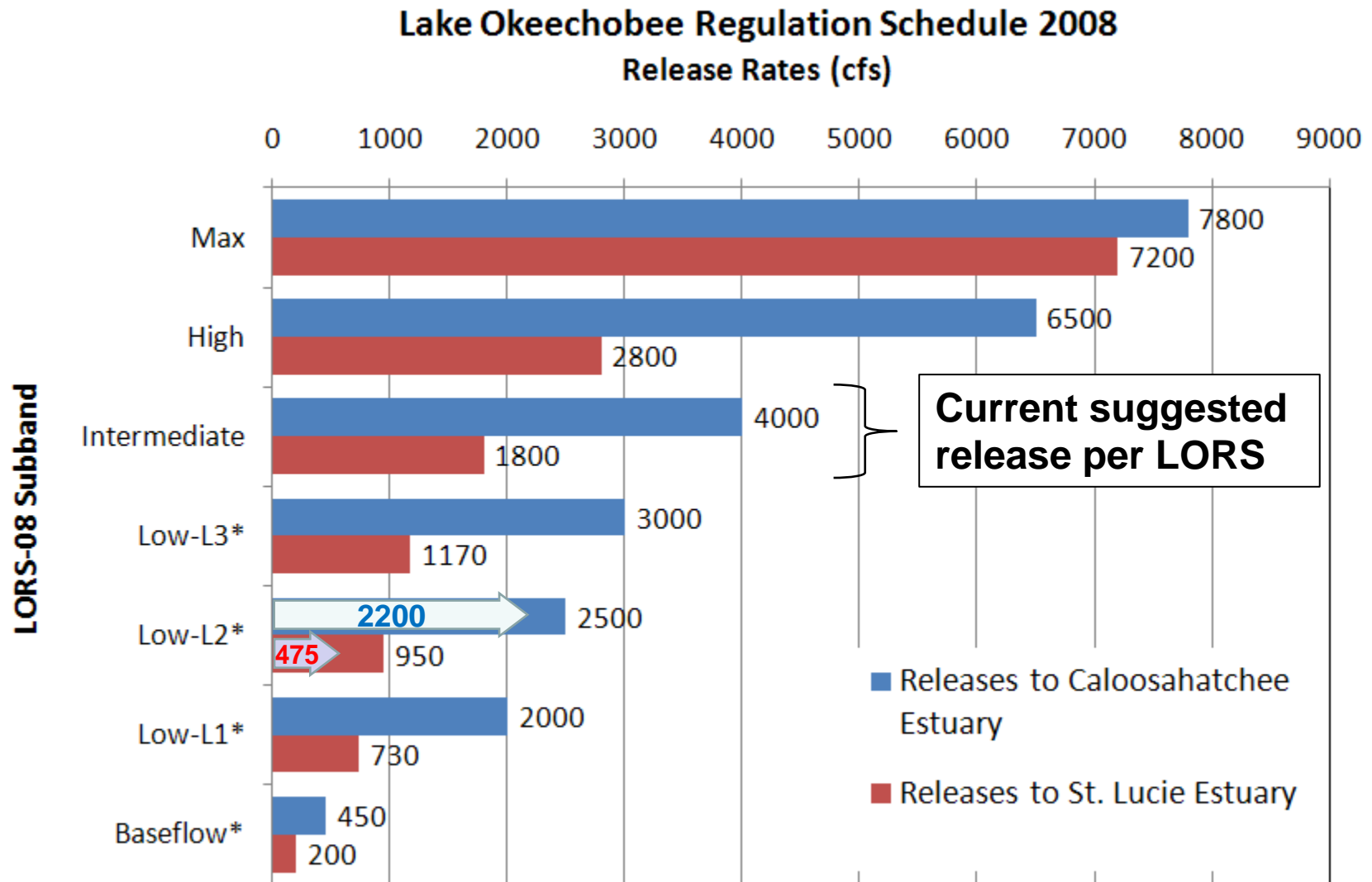


* Very Dry Conditions may require that releases to tide (estuaries) be discontinued

Figure 7-4

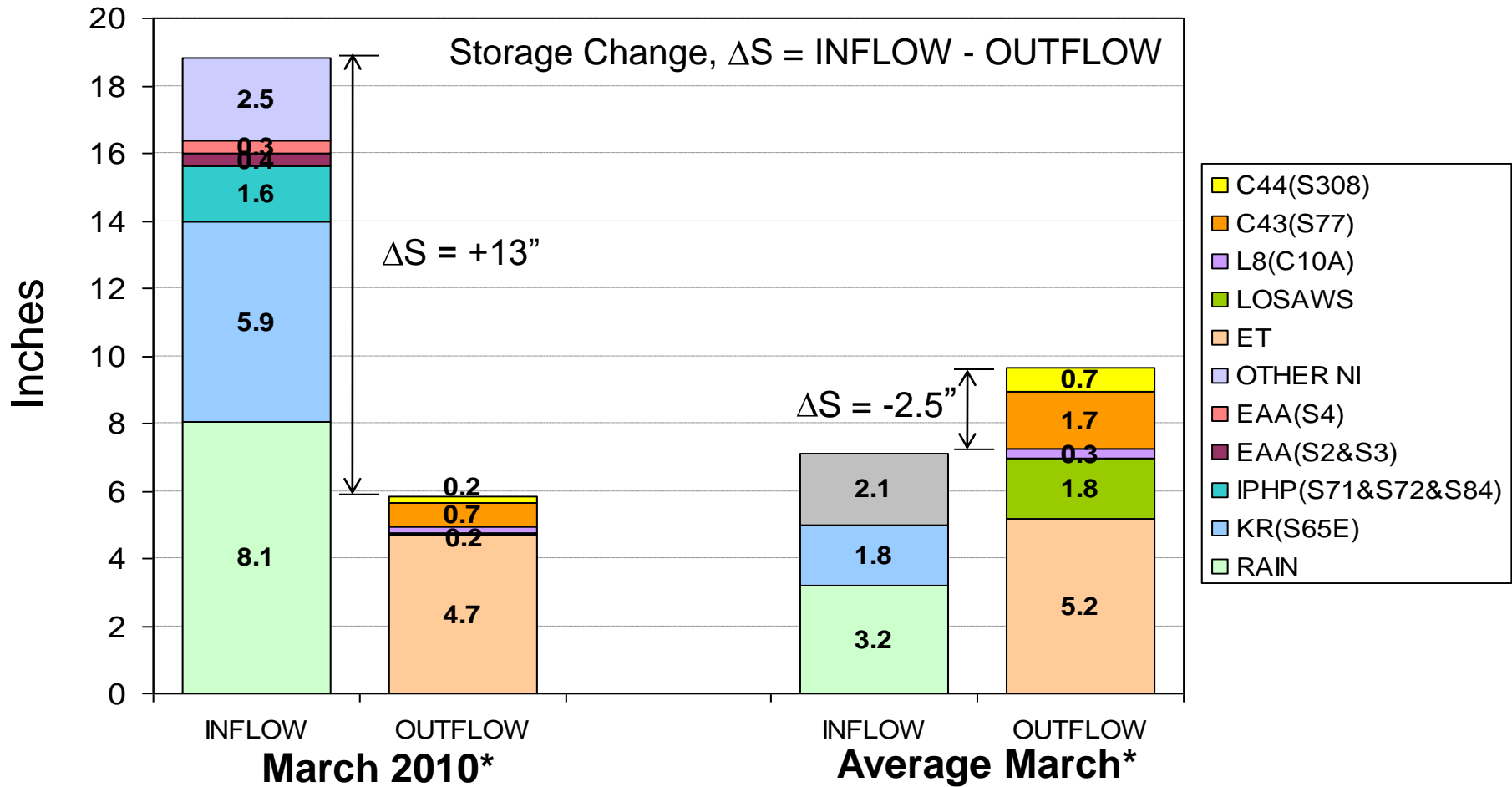
Current Release Rates are Low

compared to those required when Lake level is higher



** Lake O Releases in the Baseflow & Low Subbands are limited by basin runoff*

Lake Okeechobee March Water Budget

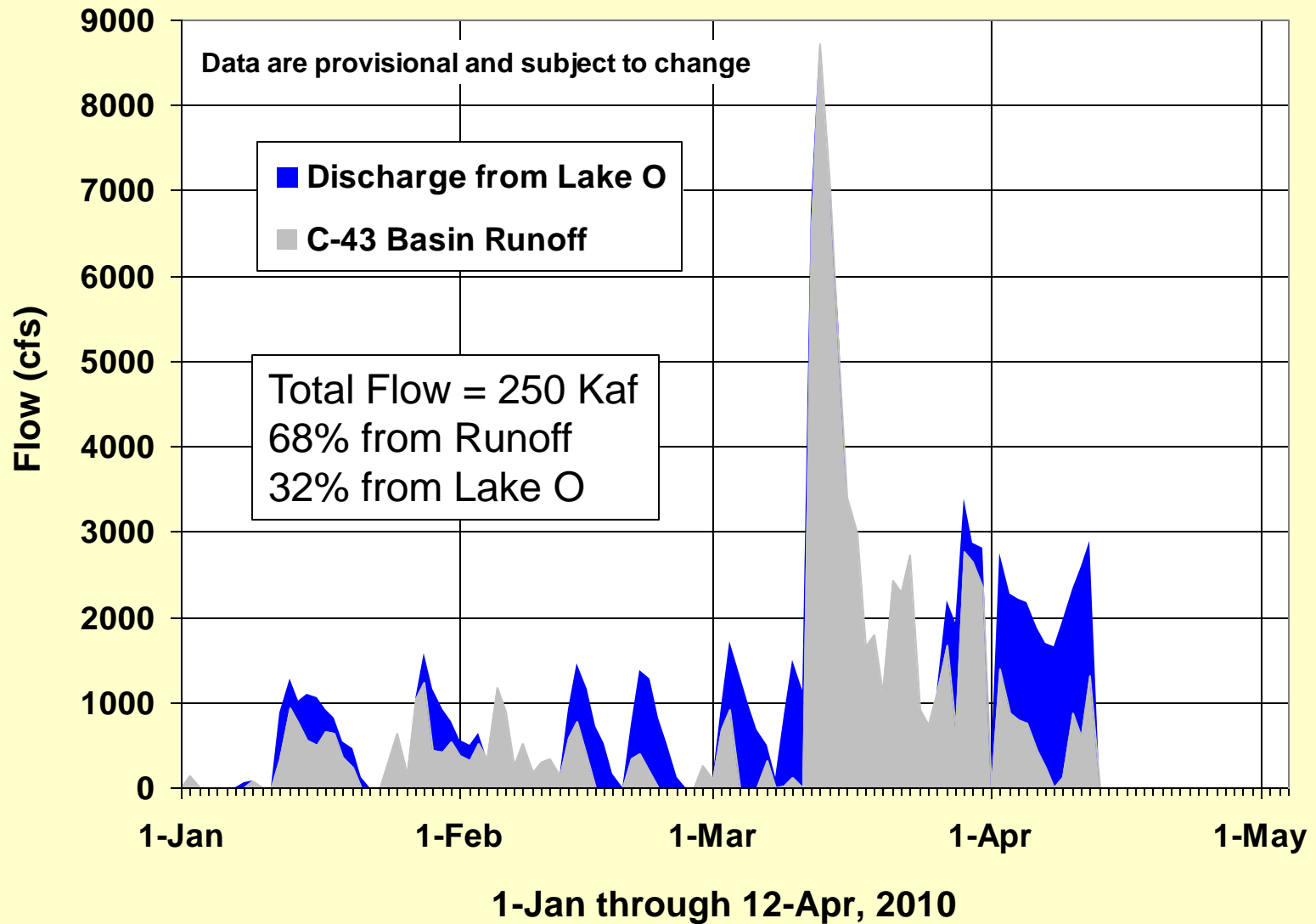


March 2010 compared with average

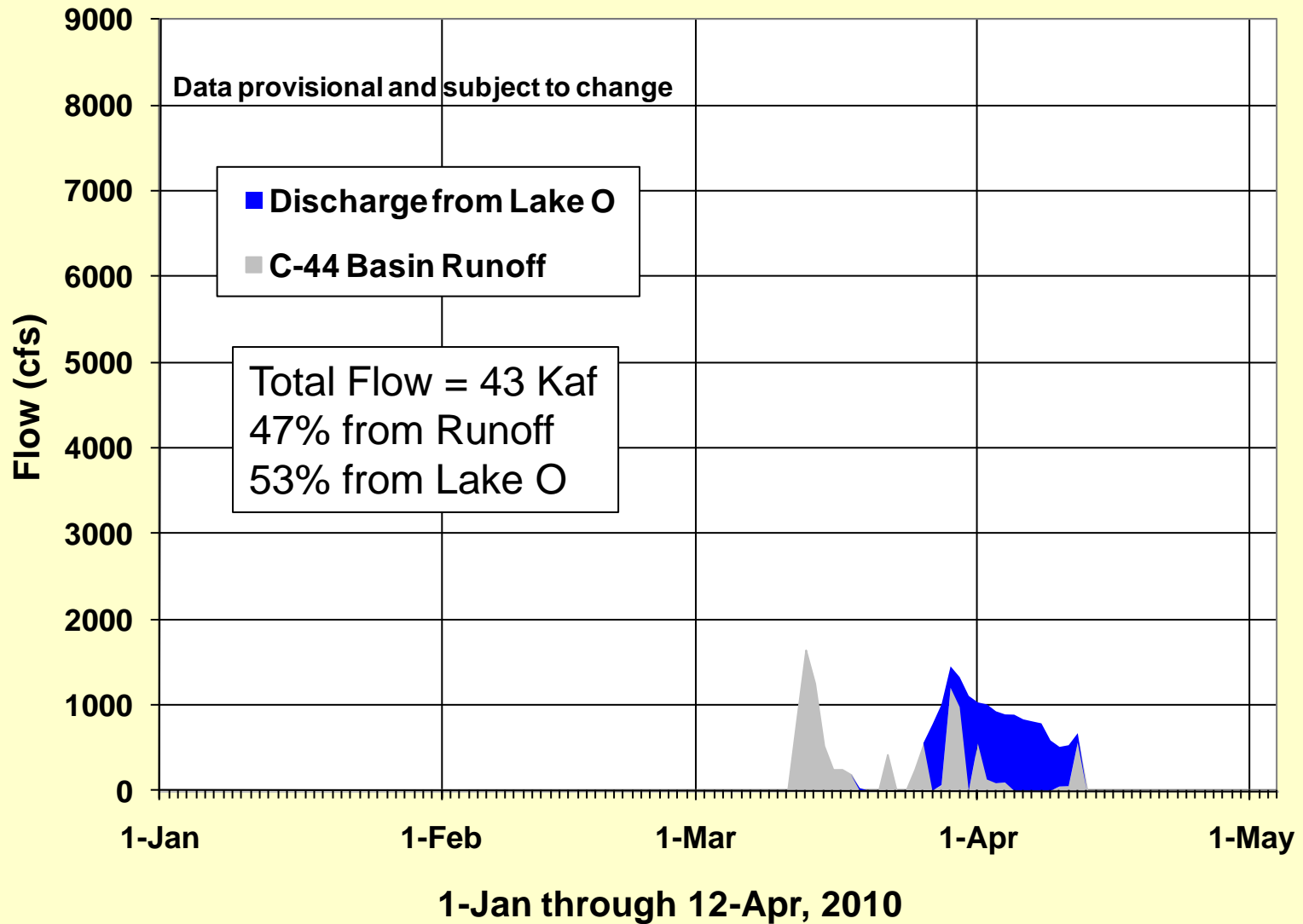
- inflows 260% of average
- outflows 60% of average
- stage increase was 13 inches, 15.5 inches above average

**All data are provisional estimates*

Total Flow from W. P. Franklin Lock & Dam (S-79) divided into Lake Release and C-43 Basin Runoff



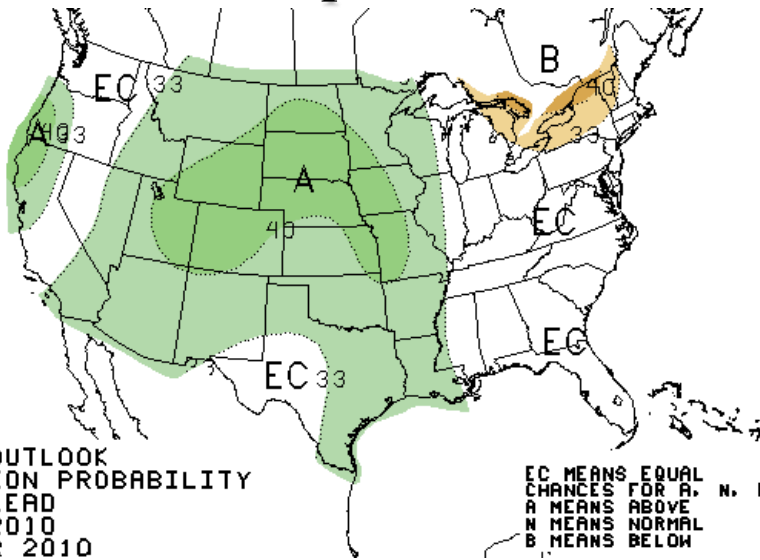
**Total Flow from St. Lucie Lock and Dam (S-80)
divided into Lake Release and C-44 Basin Runoff**



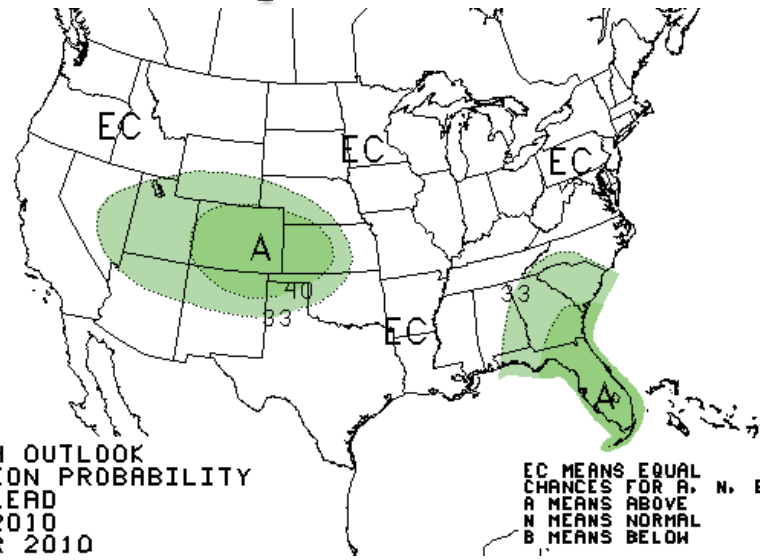
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

April



Apr-Jun

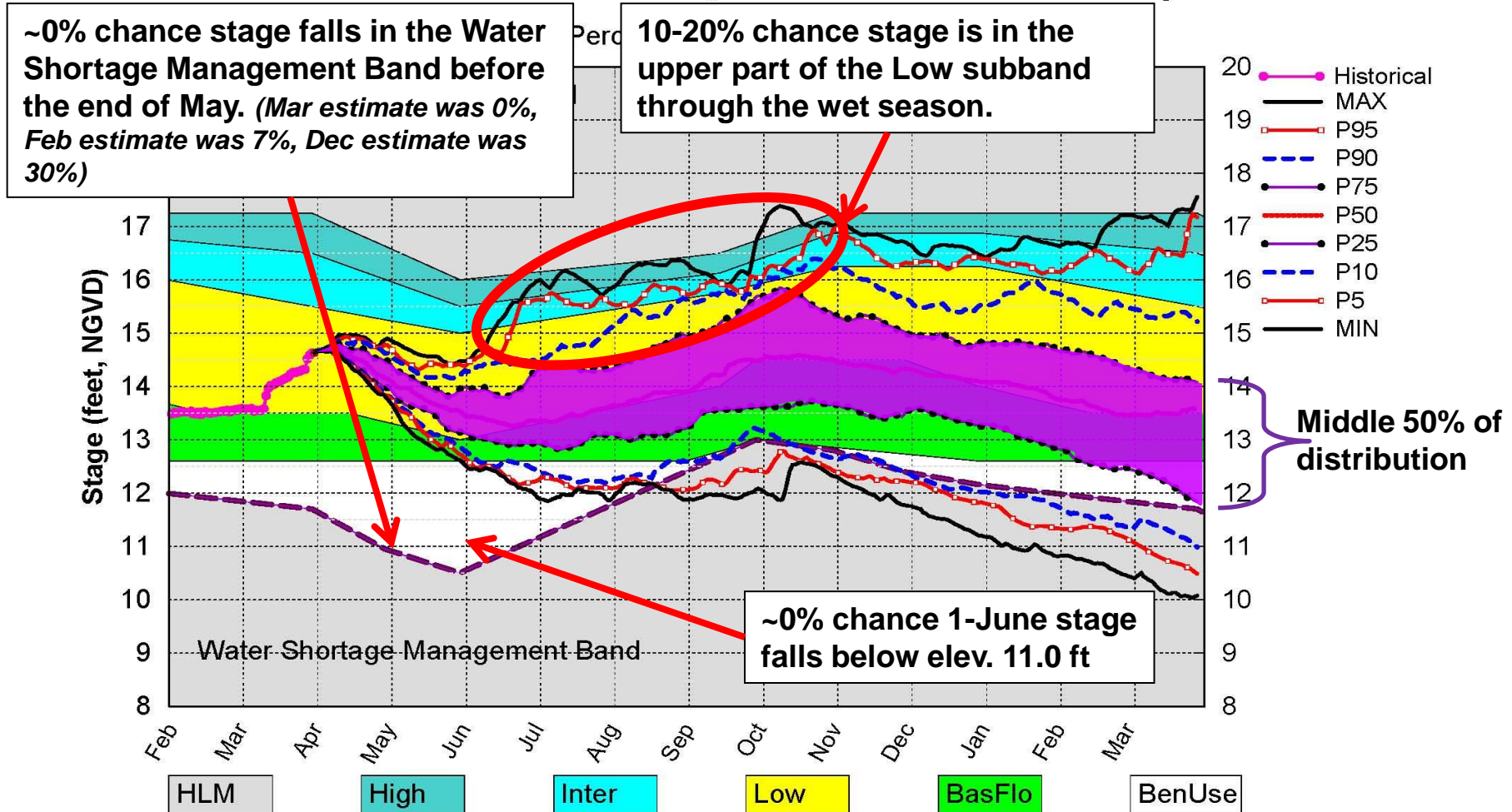


- El Nino conditions continue across the tropical Pacific. The most recent monthly sea surface temps in the equatorial Pacific range from 1-2 degrees C above normal across many areas in the equatorial central and eastern Pacific. El Nino conditions are expected to weaken, but still factor into the U.S. surface temperature and precip outlooks for the Apr-Jun period (info from CPC outlook 18-Mar-2009)
- The outlook for April shows equal chances of above-normal (A), normal (N), and below-normal (B) rainfall for central and south Florida.
- The outlook for Apr-May currently shows increased chances of above-normal (A) rainfall for central and south Florida.

Lake Okeechobee Stage Forecast

- **Future Lake stage depends on future rainfall**
- **Projections provided monthly by SFWMD
Hydrologic and Environmental Systems
Modeling (HESM) Department
Don Ketprakong, Paul Trimble, Danielle Morancy,
Luis Cadavid, Jayantha Obeysekera**
- **Position Analysis**
 - **Each year starts with current hydrologic conditions**
 - **41 1-yr simulations of system response to historical rainfall conditions**
 - **Statistical summaries used to display projections**

Lake Okeechobee SFWMM April 2010 Position Analysis

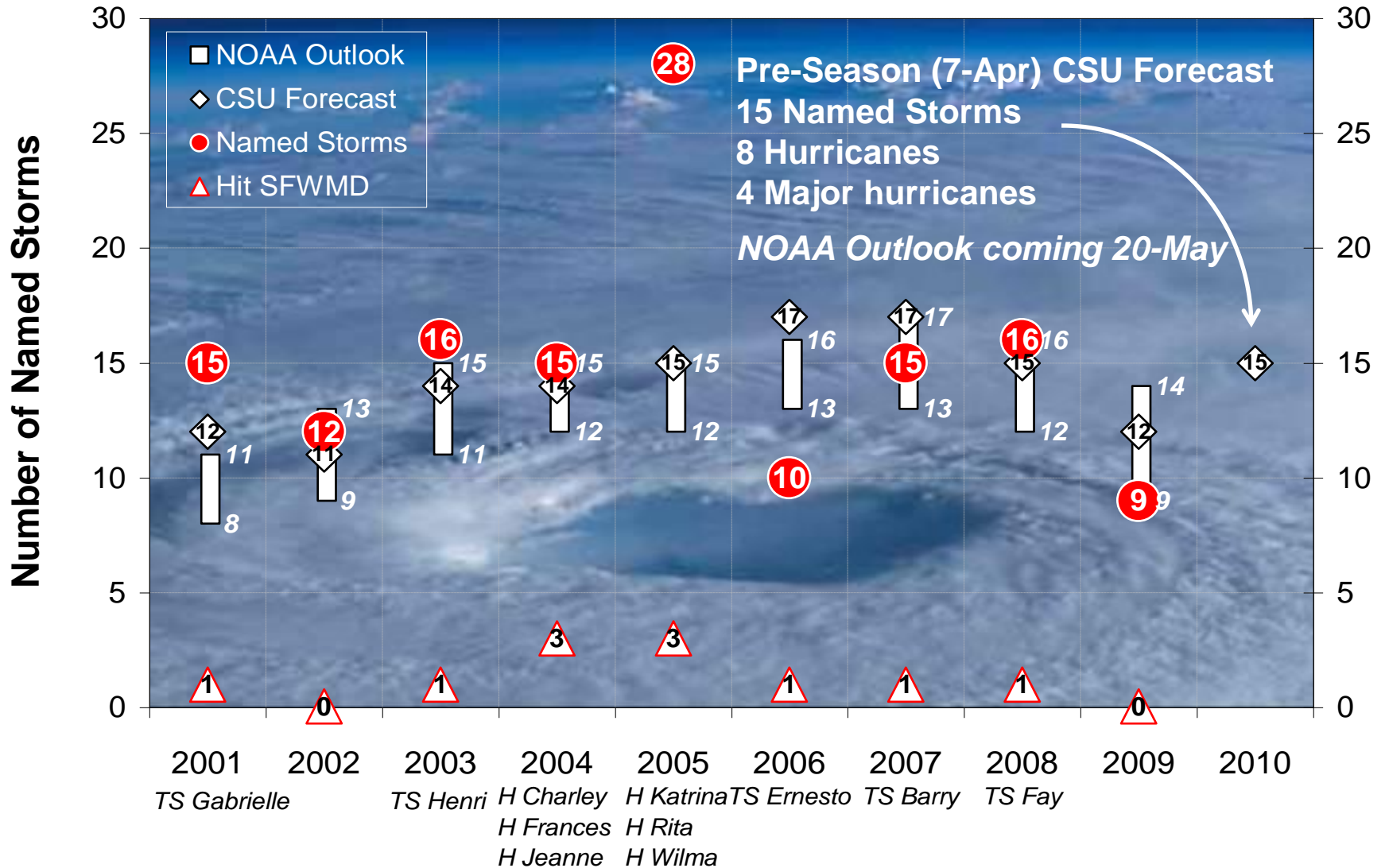


(See assumptions on the Position Analysis Results website)

Thu Apr 8 15:34:47 2010

Atlantic Hurricane Season

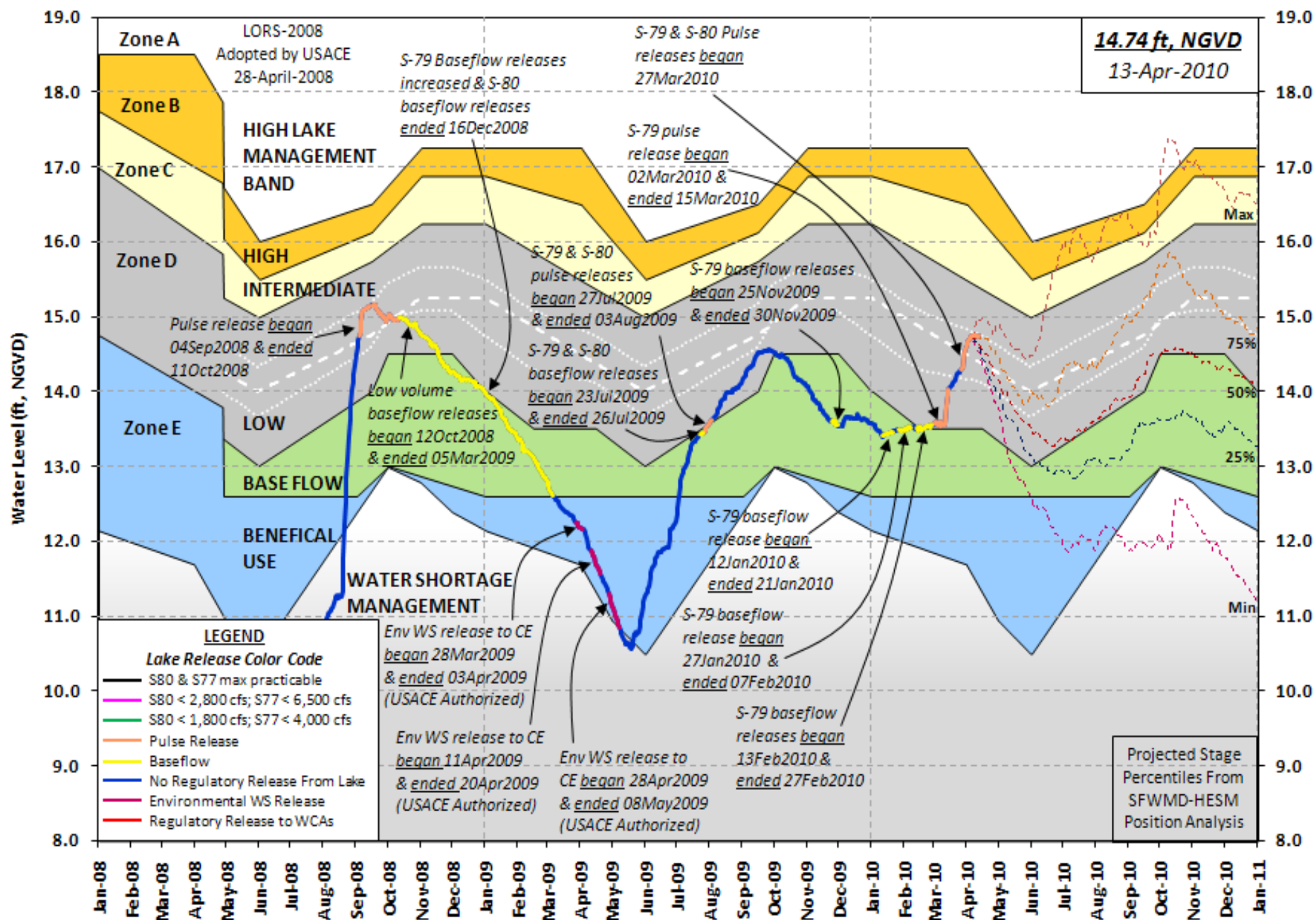
Named Storms - Observed vs Pre-Season Outlooks



Questions?

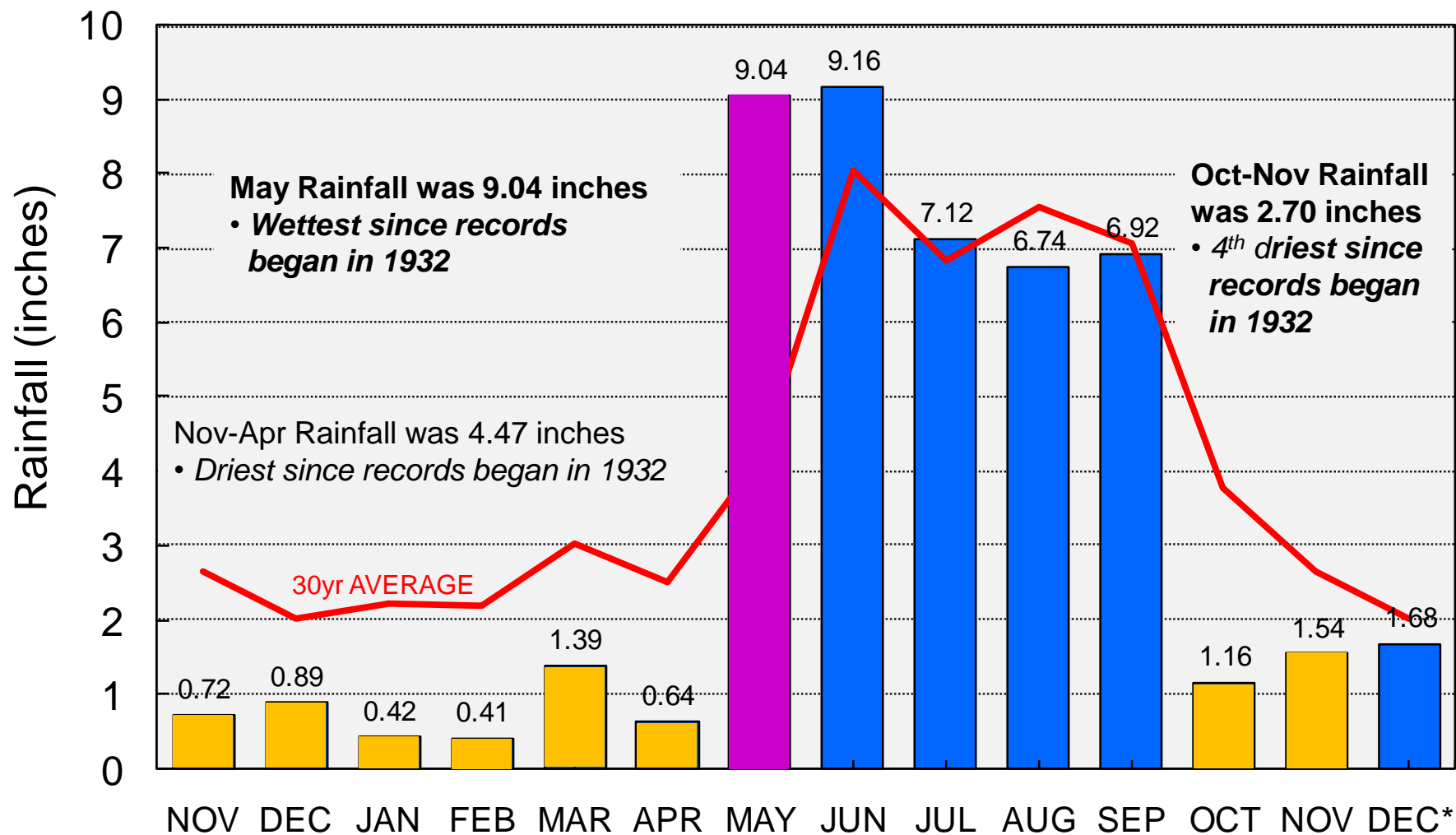


Lake Okeechobee Water Level History and Projected Stages



SFWMD MONTHLY RAINFALL

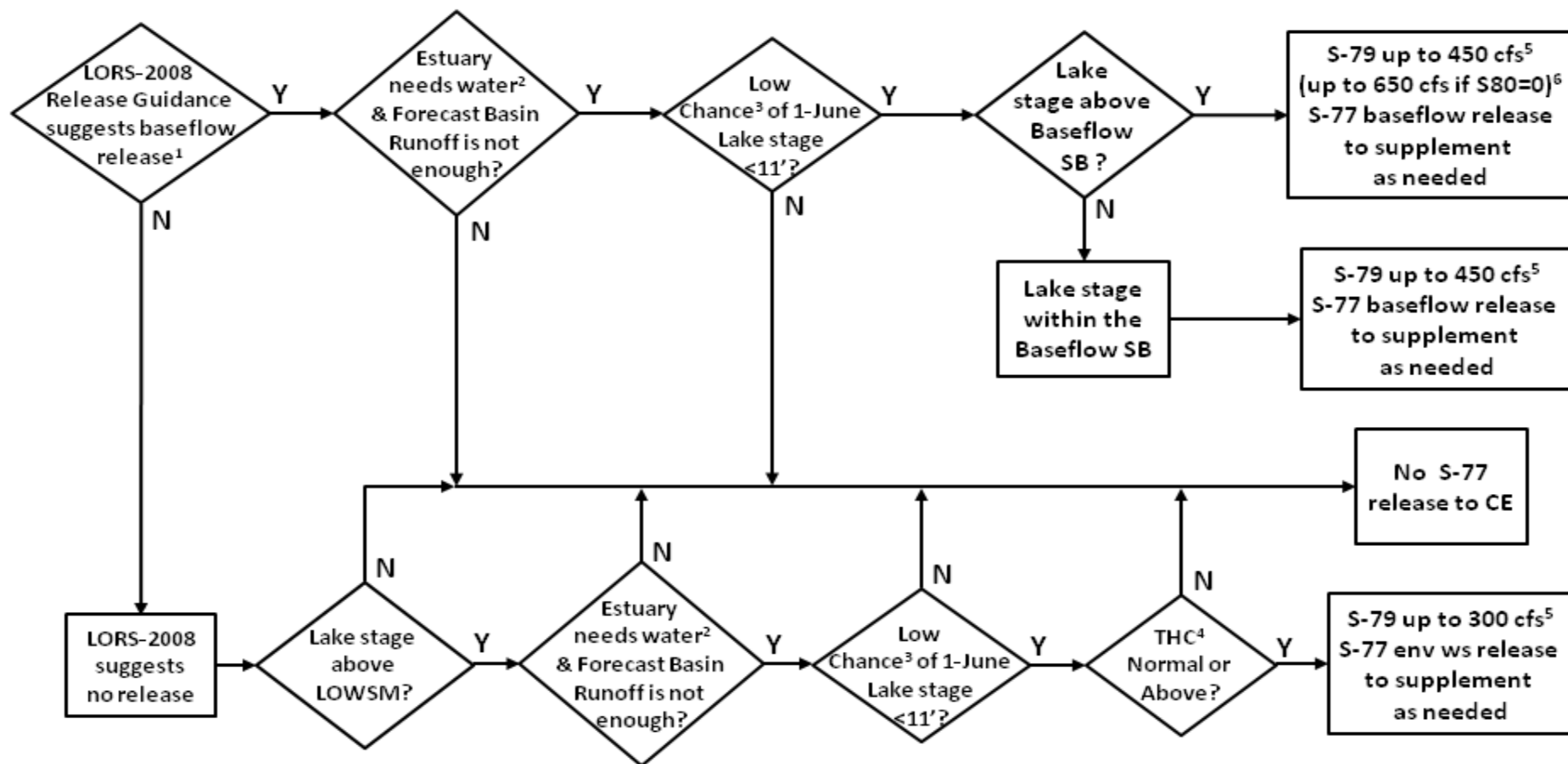
Nov 2008 - Dec 2009



Source: SFWMD Weather Office

* December total as of 7-Dec-2009²³

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for LORS-2008 Baseflow & for Environmental Water Supply



¹The LORS-2008 Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

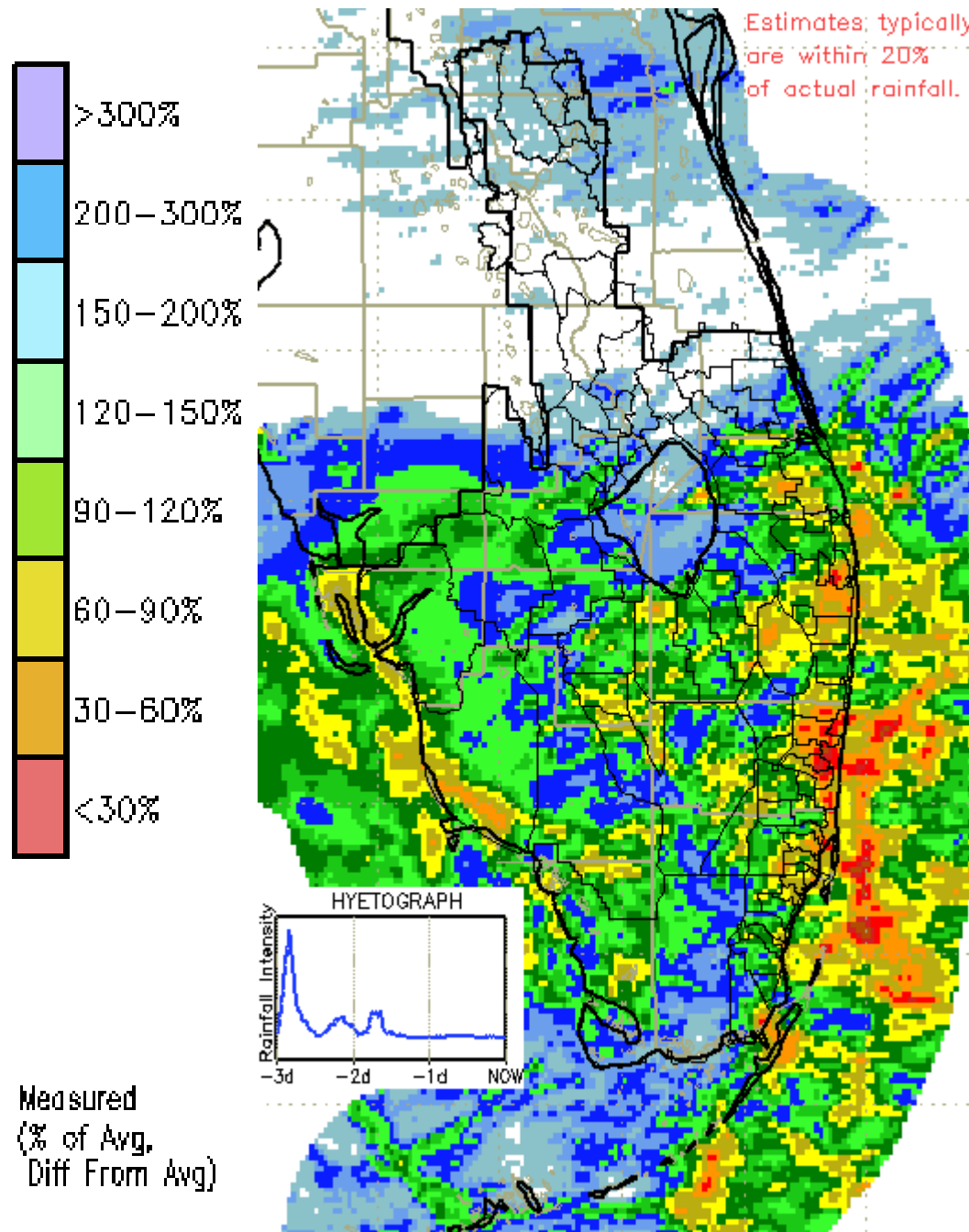
²For simulation testing, estuary "needs" water when 30d moving avg. salinity at I-75 bridge is projected to exceed 5psu within 2 weeks.

³For simulation testing, "Low chance" is defined as less than a 30% chance that the 1-June Lake stage falls below elevation 11.0', NGVD.

⁴THC = Tributary Hydrologic Condition is based on classification of Lake O Net Inflow and Palmer Index.

⁵Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity.

⁶Based on confirmation that the St. Lucie Estuary does not need all or a portion of this baseflow



SFWMD 2010 April Rainfall April 11 -12

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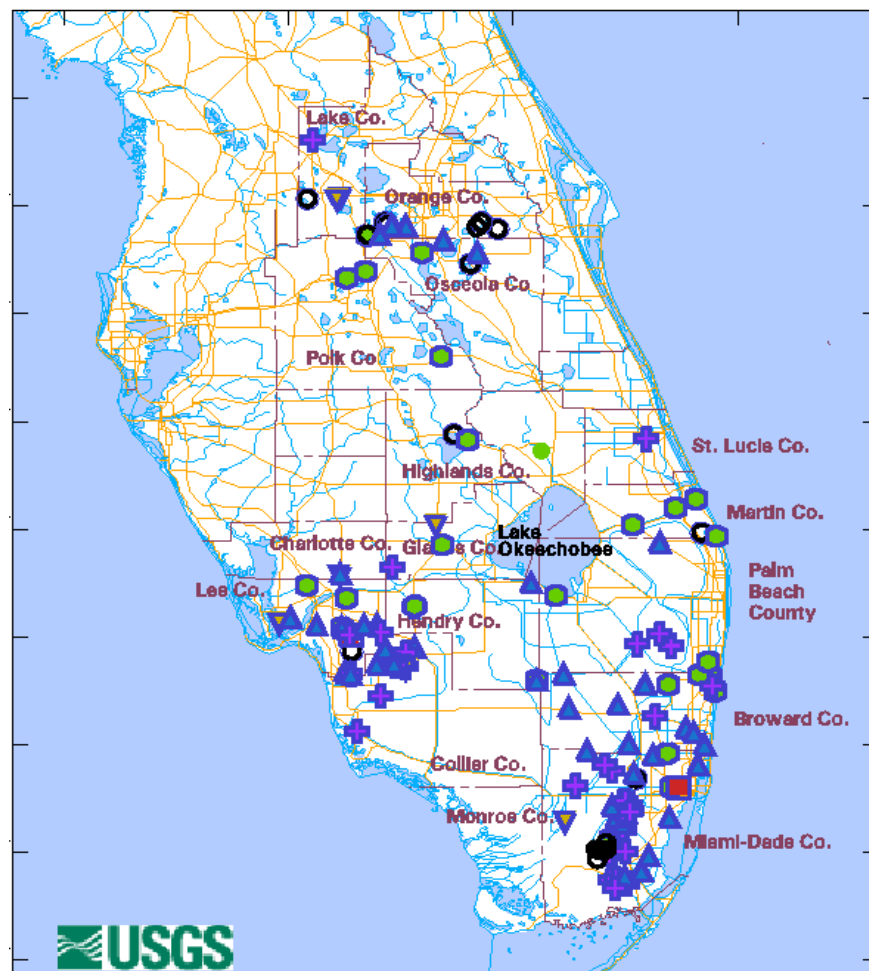
Groundwater Levels & Water Supply Status

- Most groundwater well levels dropped during the past week but remain mostly either average or above-average for this time of year

- Both Floridan and Surficial wells in the Kissimmee Basin are in general at the median levels or higher
- Lower East Coast groundwater levels are generally above average along the coast and at average values further inland for the majority of wells.
- Surficial aquifer wells in the Lower West Coast are generally at average levels expected for this time of year.

- All water supply risk indicators remain in the “low” risk category

Water levels at selected sites in South Florida,
Based on PROVISIONAL DATA, as of March 9, 2010.



Water level compared to historical data, after long-term trends are removed:

- Insufficient information available to compute water-level statistics
- In lowest 10 percent of past water elevations
- ▼ Within lowest 10 to 30 percent of past water elevations
- Within 20 percent of the median of past water elevations
- ▲ Within highest 10 to 30 percent of past water elevations
- ✚ In highest 10 percent of past water elevations

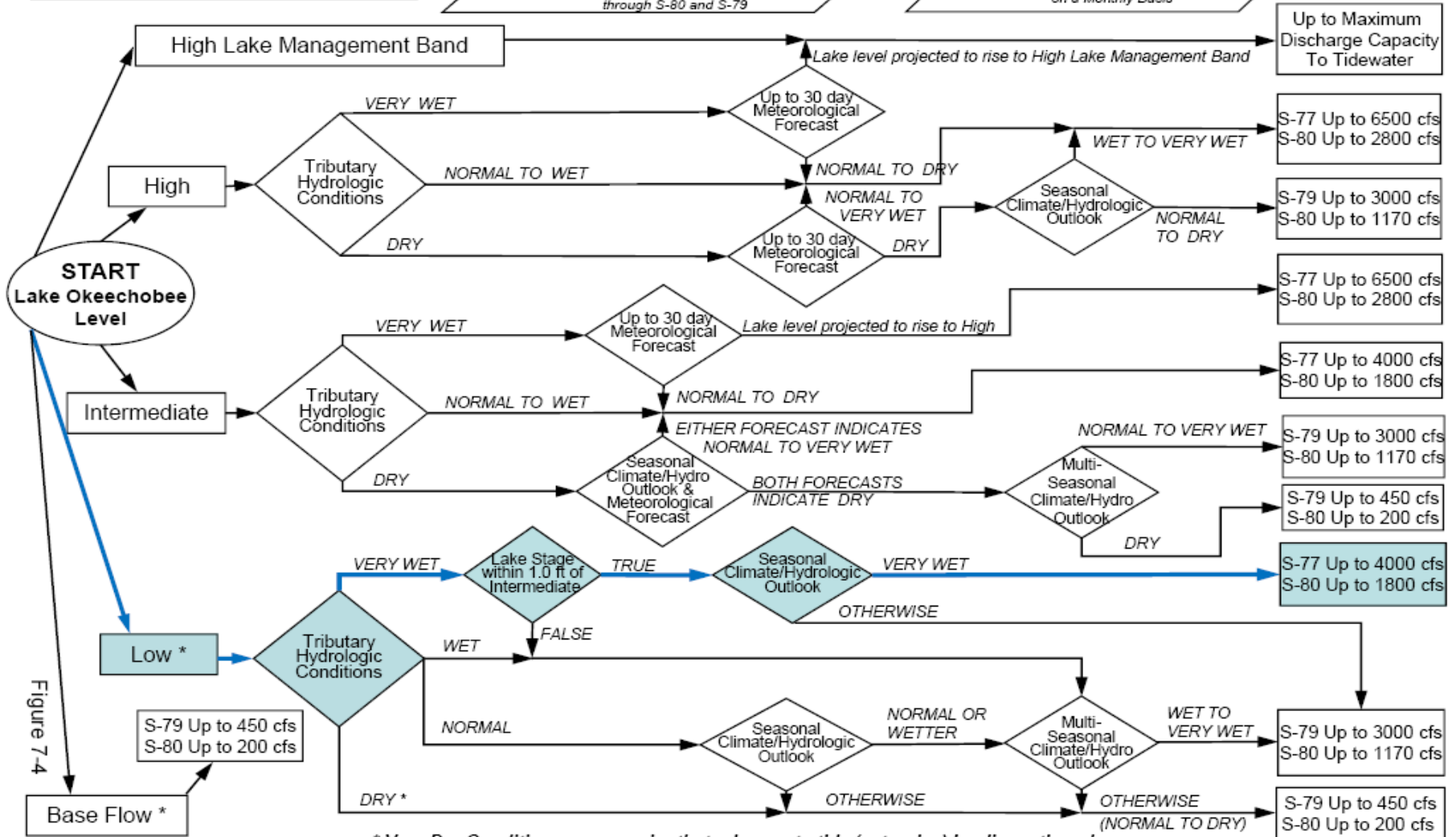
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Figure 7-4

Lake Okeechobee Releases

- On March 2, the U.S. Army Corps of Engineers initiated a 21-day release (3 x 7-day pulses) from Lake Okeechobee to the Caloosahatchee Estuary with an average daily flow of 800 cfs.
- Current stage is rising slowly within the low sub-band of the Lake O Regulation Schedule (LORS), & the release guidance calls for up-to 3000 cfs at S-79, up-to 1170 cfs at S-80, and no releases to the WCAs.
- Release mode is transitioning from holding to releasing
- Summary of District staff's recommendation to the USACE:
 - Current Lake ecological conditions do not require a more-aggressive lake stage recession if it would result in impacts to the estuaries.
 - Increase current pulse releases at S-79 to an average of 1200 cfs.
 - Initiate pulse releases to the St. Lucie Estuary at S-80 averaging 400 cfs.
 - Re-evaluate system conditions next week for potential modifications to pulse discharge volumes.

Lake Okeechobee Stage Forecast Summary

- **>50 chance Lake releases will be needed to manage Lake stages through April**
 - **>50% chance stage is in the base-flow subband or above through the end of April.**
- **Almost a zero chance of water restrictions in the Lake O Service Area this spring.**
 - **~0% chance stage falls in the Water Shortage Management Band before the end of May. (Feb estimate was 7%, Dec estimate was 30%)**
- **Low risk of water shortage means some flexibility exists to send environmental water deliveries to the Caloosahatchee Estuary, if needed.**
 - **Very low chance (<5%) the 1-June stage will fall below 11.0 ft.**